ON CERTAIN CHARADRIIFORM BIRDS OF BAFFIN ISLAND

BY GEORGE M. SUTTON AND DAVID F. PARMELEE

THE preference many arctic birds show for grass tundra as a nesting ground is noted by Soper (1940), but he does not explain the preference. Of the grass tundra he says (p. 13): "Where this is boggy and sprinkled with ponds and small lakes, the breeding population of birds reaches the peak of abundance." Of the desert tundra he says (p. 19): "Practically, if not entirely absent over the greater part of these rocky sectors . . . will be . . . birds which are abundant as breeders on the grass tundra . . . especially . . . in close proximity to the sea."

Our observations in southern Baffin Island in the summer of 1953 support Soper's statements to a remarkable degree, especially with regard to charadriiform birds. Our headquarters were near the head of Frobisher Bay, at a Royal Canadian Air Force Base (Lat. 63°45′ N., Long. 68°33′ W.). An 18-square-mile area, most of it high desert tundra, but some of it marshy lowland near the sea, we covered thoroughly. In this study-area, which lay principally just to the north and northeast of the Base, we failed to record a jaeger (*Stercorarius*) of any species, we did not once see the Arctic Tern (*Sterna paradisaea*), and we found only one shorebird breeding at all commonly—the Semipalmated Plover (*Charadrius semipalmatus*). This species preferred well-drained gravelly places for its nesting. One other shorebird bred in the area or somewhere close by—the Red-necked (Northern) Phalarope (*Lobipes lobatus*). We did not find this species' nest, but we collected a male with well-defined brood-patches.

This failure to find jaegers, terns, and nesting shorebirds was not the result of inattention or inactivity. During the season of migration we recorded the White-rumped Sandpiper (*Erolia fuscicollis*), Semipalmated Sandpiper (*Ereunetes pusillus*), and Red Phalarope (*Phalaropus fulicarius*) repeatedly, and we fully expected to find these species breeding; but by the end of June they had left us. For a time we blamed the shorebird shortage on the comings and goings of aircraft, on mosquito-control and drainage measures, etc., but when we visited the undisturbed grassy flats near the mouth of the Jordan River, 16 miles west of the Base, and found very few shorebirds there, we concluded that the whole head of the bay was, for reasons beyond our understanding, unattractive to shorebirds. Near the mouth of the Jordan several Semipalmated Plovers and a few White-rumped Sandpipers and Semipalmated Sandpipers were nesting.

The absence of jaegers we attributed at first to the local abundance of Snowy Owls (*Nyctea scandiaca*). We reasoned that the owls had established themselves early, well before our arrival, and driven the jaegers out. But

as our data accumulated, as it became increasingly apparent that lemmings (both *Dicrostonyx groenlandicus* and *Lemmus trimucronatus*) were common, while such lemming-eaters as foxes (*Alopex lagopus*) and weasels (*Mustela erminea*) were either very rare or missing altogether, we concluded that more than the single factor of lemming-availability was necessary to make the region attractive to jaegers. In this connection we point out that the Rough-legged Hawks (*Buteo lagopus*) of our study-area were living exclusively, and the Peregrines (*Falco peregrinus*) extensively, on lemmings.

What kept Frobisher Bay from being attractive to shorebirds, jaegers and terns became a sharply defined question with our first trip to the southeast shore of Lake Amadjuak (Lat. 64°38′ N., Long. 70°28′ W.) on August 8. Here, less than 100 miles northwest of the head of Frobisher Bay, we found the American Golden Plover (*Pluvialis dominica*), Purple Sandpiper (*Erolia maritima*), Pomarine Jaeger (*Stercorarius pomarinus*), Long-tailed Jaeger (*S. longicaudus*), and Arctic Tern breeding. Again, on August 11, in the vicinity of Cape Dorchester (Lat. 65°20′ N., Long. 77°10′ W.), we found the Parasitic Jaeger (*Stercorarius parasiticus*), Long-tailed Jaeger, Arctic Tern, American Golden Plover, and White-rumped Sandpiper breeding. On our second trip to Lake Amadjuak, August 15, we collected a Red Phalarope which almost certainly had bred there.

Some of the above-mentioned birds seem to require vast stretches of wet grassy tundra for their breeding. Here the comparatively lush vegetation furnishes some shelter when the weather turns rough. Here there is food. Here the great stretches of shallow water provide nest-sites inaccessible to certain predators—low islands of all shapes and sizes, some wet, some dry; long peninsulas; off-shore bars; marshes—areas in which it is possible during the brief but well-lighted period between arrival from the south and establishment of nest-territories to ascertain, through experience hour after hour, which spots are best—i.e., the closest to a good food supply, the most comfortable, and the least molested. Certain mammalian predators are a primary concern for all birds. Foxes prey on owls, jaegers and large gulls, as well as on plovers and "peeps." Factors which make an area attractive to shorebirds may not attract jaegers directly, but the shorebirds themselves do, for jaegers eat shorebirds. Islands are requisite to the successful breeding of some colonial species, such as the Arctic Tern, and in such species an abundance of individuals may be a factor attracting more individuals.

One has to cross this flat, monotonous grass tundra afoot, mile after mile of it, to appreciate its character. Off in every direction, as far as the eye can see, there are ponds. A distant lake, seen through the binocular, looks good for birds, for there is a scattering of little islands along the shore. Reaching this lake requires a circuitous route around and between a score

of lesser ponds, for nowhere is the water shallow enough, or the bottom firm enough, for easy wading. By the time one has reached the lake, visited the nearest of the little islands, and followed a stretch of the shore-line, one realizes how birds nesting at the very tips of the long peninsulas, or off in the middle of the big marshes, escape predators by the sheer circumstance of being where they are.

We have reported on two of the following species, the Semipalmated Plover and Purple Sandpiper, in detail elsewhere, but we refer to them briefly for the sake of completeness.

Charadrius semipalmatus. Semipalmated Plover.—This, "the common plover of Baffin Island" (Soper, 1928:102), nested in the immediate vicinity of the Base, on Davidson Point, about Tarr Inlet, near the mouth of the Jordan River, and here and there in the interior, in gravelly places near rivers. We did not find it at Lat. 68°31′ N., Long. 71°22′ W., near a lake about 50 miles east-northeast of Wordie Bay, August 8; at Lake Amadjuak, August 8 and 15; or at Cape Dorchester, August 11 (see Sutton and Parmelee, 1955*b*:138). The Ringed Plover (*C. hiaticula*), a species reported from more northeasterly parts of Baffin Island (Kumlien, 1879:83; Soper, 1928:103; Shortt and Peters, 1942:343; Wynne-Edwards, 1952:367–369), we did not see.

Pluvialis dominica. American Golden Plover.—We recorded this species at the head of Frobisher Bay only once. On June 22, we collected a male (GMS 11718) in almost complete breeding plumage just north of the Base. The bird was blind in one eye, yet it was fairly fat and its stomach contained insect and spider remains, some tiny seeds, and the flesh of winter-refrigerated crowberries (*Empetrum nigrum*).

At Lake Amadjuak, on August 8, we saw two adults and heard others in the distance. The plateau-like breeding area was well back from the lake-shore. An adult male collected (GMS 11820) was in mixed plumage. It must have had young near by, for it flew toward us boldly then ran off with head low, tail spread, and wings drooping.

Near Cape Dorchester, on August 11, we heard the Golden Plover repeatedly; were followed about by a clamorous adult which must have had young near by; noted a flock of eight, high in air, and a single adult, not so high, flying swiftly southeastward; and observed two strong-flying young birds, siblings probably.

At Lake Amadjuak, August 15, we saw about 20 Golden Plovers, four of them sibling chicks barely able to fly. One of these (male, GMS 11840) we collected. It was downy on the forehead, supercilium, chin, throat, mid-chest, tibial region and under tail coverts. The incoming plumage of the fore-neck, chest, belly and sides was much spotted. The first-winter crown feathers, back feathers, scapulars, rump feathers, and upper tail coverts were spotted with rich yellow. Several parent birds followed us noisily in the high country back from the lake-shore. In one area the eight birds formed a sort of flock. They flew up together, circled us in a group, and alighted together. They were blotched or spotted rather than solid black on the under parts, and not one of them was boldly white on the sides of the neck. The alarm cry was not the familiar *too-lee-oo* or *too-di-lee*, but a more elaborate *kill-ee-oh kill-ee*, or *pull-ee-oo plee-ee*. This fact we had opportunity to check repeatedly. We collected one adult, a molting male (GMS 11848). Its under parts were lightly blotched with black.

Soper (1946:226) noted this species "frequently" at Cape Dorchester in late August, 1928. Neither Kumlien (1879) nor Wynne-Edwards (1952) listed it, and our Frobisher Bay record apparently is the first for that area. We did not see the species in the Wordie Bay district, August 8.

FIG. 1. Muddy tundra of the Purple Sandpiper breeding ground. Photographed August 15, 1953, near the southeast corner of Lake Amadjuak, Baffin Island.

Measurements, in millimeters, of our three adult males (GMS Nos. 11718, 11820, 11848) are: wing, 178, 173, 179; tail, 67, 65, 69; exposed culmen, 23.5, 23.5, 23.0; tarsus, 40.0, 42.0, 42.0. The specimens represent the nominate race.

Squatarola squatarola. Black-bellied Plover.—This species we recorded three times on the tidal flats near headquarters: on June 16, three seen in an area strewn with large boulders and seaweed; on June 19, one heard in the distance; and on June 20, one heard and another seen. Near Cape Dorchester, August 11, we heard the mellow *too-ree* in the distance several times but did not collect a specimen.

Soper (1946:227) found this species one of the "most characteristic birds" of the Bowman Bay area, June 6–18. 1929. After June 18 "the majority passed on to north, but fair numbers remained to breed on the lowlands . . ." Our Frobisher Bay records apparently are the first for that area.

Arenaria interpres. Ruddy Turnstone.—We saw two turnstones on the tidal flats near the Base, June 16. Though brightly colored, they were not in complete breeding feather. Taking alarm at our approach, they flew to some big rocks above high-tide mark where they were joined by three White-rumped Sandpipers. On June 27 we saw a single turnstone feeding in a sheltered cove along the shore of Davidson Point.

On August 11 we heard the rattling cry of a turnstone along the shore of the lake in which our amphibious aircraft alighted not far from Cape Dorchester.

Erolia maritima. Purple Sandpiper.—We collected several Purple Sandpipers on rocky islands near the head of Frobisher Bay July 29 to August 6. but the species did not breed near the Base or at the mouth of the Jordan River. Along the southeast shore of Lake Amadjuak (Fig. 1) we found a sparse breeding population. August 8 and 15. Here we took adult and young specimens, the latter barely able to fly (Sutton and Parmelee, 1955*a*:218). We did not record the species in the Wordie Bay district or at Cape Dorchester.

Erolia fuscicollis. White-rumped Sandpiper.—This species Soper (1946:229) found breeding about Nettilling Lake and Bowman Bay. Concerning its abundance at the latter locality in spring he says: "Like the Purple Sandpipers, they invaded the region in

almost incredible numbers and swarmed over every available patch of tundra, only lately cleared of snow. This intense wave of migration persisted from June 8 to 14, after which their numbers gradually diminished, but a large . . . population remained to nest on the surrounding tundra."

We saw very little of the species anywhere about Frobisher Bay. In the vicinity of the Base we recorded it a few times June 15 to 21, but witnessed neither courtship nor flight-singing. On June 15 we saw five birds—two together by themselves and three with two Semipalmated Sandpipers. The White-rumps worked their way daintily through the grass, sometimes wading deep in water which spilled swiftly from a pond close by. June 16 we saw ten White-rumps, three "singles," two "pairs," and a group of three which joined two turnstones on a rock above high-tide mark. On June 18 we saw a few White-rumps on Davidson Point, one of them with some Red Phalaropes, and found White-rump remains below a Peregrine eyrie near the mouth of the Sylvia Grinnell. On June 21 we saw a single White-rump on the tidal flats not far from the Base.

On July 18, just west of the mouth of the Jordan River, we found a female White-rumped Sandpiper and her brood. The old bird's principal callnote was the well-known *chick* or *tsick*, which she uttered only in flight; but she also twittered or chattered as she circled us. Three of her brood, two males and a female, unable to fly and still quite downy, we caught one by one, with a series of prolonged waits and headlong dashes across the tundra. They ran with astonishing speed. One which disappeared while we were watching it through our glasses we found in a lemming burrow. Held in the hand, it struggled and cheeped. We heard no call from any of the chicks while they were running free. The adult's bill (GMS 11765) was rich orange-brown at the base, grayish black otherwise. The tarsi and toes were dark brownish-gray. In each of the young birds (GMS 11766,-7,-8) the bill was dark gray with olive base, the tarsi and toes gray with olive tinge. The area inhabited by these birds was decidedly wet—the marshy edges of a small, shallow pond. We failed to find the male parent.

On July 19 we found another adult White-rumped Sandpiper in about the same marshy area. It was not very demonstrative, but lingered in the vicinity. It proved to be a female (GMS 11772) with distinct brood-patches.

The grassy area in which we found these birds extended for two or three miles along the bay-shore and two miles or so up the Jordan. A few Semipalmated Sandpipers bred in slightly drier parts of the same area. The Semipalmated Plover was restricted to well-drained gravelly places not far from the river.

August 15 we saw a single White-rumped Sandpiper on the tundra well back from the shore at Lake Amadjuak. We did not record the species at the head of Frobisher Bay in August.

Measurements of our two adult females (GMS 11765, 11772) are: wing, 122, 120; tail, 53, 52.5; exposed culmen, 23.0, 22.0; tarsus, 24.5, 24.0.

Erolia bairdi. Baird's Sandpiper.—This species is said by Soper (1946:230) to be "much less common" than the White-rumped Sandpiper in southern Baffin Island. We noted it three times: June 15, in a grassy spot near the Base, three birds together not far from three White-rumped Sandpipers and two Semipalmated Sandpipers; June 16, three birds, together on the tidal flats near the Base; and June 18, three birds together along the sandy shore of a large shallow pond near the landing-strip. On each occasion the birds gave rolling cries on flying up. We did not observe courtship or flight-singing.

We looked in vain for the species in the Wordie Bay district, along the southeast shore of Lake Amadjuak, and at Cape Dorchester. Wynne-Edwards (1952:369) found the bird "common" at Clyde, on the coast and at the head of Clyde Inlet.

Ereunetes pusillus. Semipalmated Sandpiper.—This species we recorded several times in the vicinity of the Base: June 15, two feeding not far from three White-rumped Sandpipers and three Baird's Sandpipers; June 16, seven or eight birds in all, one of them trilling briefly from a standing position; June 17, two birds together in grassy tundra; June 18, three or four birds about pools on Davidson Point; June 20, one bird, feeding near the outlet of a tundra pond, another, trilling loudly both on the ground and in flight, on Davidson Point. This last bird we collected, finding it to be a male (GMS 11716). Each testis measured about 6×4 mm.

On grassy flats just west of the mouth of the Jordan River we found several Semipalmated Sandpipers on July 18. Well back from the high-tide mark we ran down a still partly downy chick (female, GMS 11768) and shot the parent, a male (GMS 11769), whose alarm cry was a musical *tsert* or *chert.* Much closer to the salt water, at the edge of the grassless flats, we caught a very small male chick (GMS 11770), probably only a day or so old. Here we saw several adults, probably both males and females. On July 19, in this same general area, we counted about 20 adults, all of which seemed to be agitated. Some distance inland we collected a single male (GMS 11773) not far from a little pond. It had well defined brood-patches but very small testes.

On August 15 we saw about twenty scattered Semipalmated Sandpipers in a flat stretch of tundra about 200 yards from the southeast shore of Lake Amadjuak. We collected one young bird, a partly downy male (GMS 11844). The adults had a way of standing quietly, then flying up suddenly in groups of three or four. One of them gave a bit of a trill.

We last saw the species on August 18—a single bird among several Semipalmated Plovers on the tidal flats not far from the Hudson's Bay Company Post.

Our three adult male specimens (GMS 11716, 11769, 11773) measure: wing, 90, 93, 94; tail, 42.5, 43.5, 42.5; exposed culmen, 20.0, 19.5, 20.0; tarsus, 20.5, 21.0, 21.0.

Phalaropus fulicarius. Red Phalarope.—We saw so much of this species near the Base June 15–20 that we thought surely it would remain to nest, but it did not. On June 15 we saw about 20 males and about 26 females in two and threes on little ponds just north of the Base. Several times we saw two males and a female together twirling about or dabbling for food. Callnotes were a reedy *pheep,* an incisive *fick* or *fitick,* and a *chu-eep.* June 16 we saw large flocks in salt water pools between the bay-ice and the shore, smaller flocks in tidal pools, and scattered groups on the tundra ponds. June 17 we saw good-sized flocks of both males and females in partly thawed lakes and the larger tidal pools and heard sounds of wing-fluttering from courting females. June 18 we saw a good-sized flock flying about the pools on the tidal flats, but on the tundra ponds the birds were in scattered twos and threes. On this date we found Red Phalarope remains below a Peregrine eyrie near the mouth of the Sylvia Grinnell and in the stomach of a male Peregrine collected.

By June 19 the height of the shorebird migration had passed. On that date we saw six Red Phalaropes, three of which (two males and a female) we collected. Each of the four testes measured about 10×6 mm. On June 20, the last date on which we recorded the species about Frobisher Bay, we saw three females and two males in a pond on Davidson Point.

In a marshy area between two ponds near Lake Amadjuak, August 15, we collected a molting male which fluttered about calling anxiously as if in concern over a brood. There was a large brood-patch at either side of the belly and feathers dropped out badly during skinning.

We did not see the species in the Wordie Bay district, August 8, or near Cape

Dorchester, August 11. Measurements of our three male specimens (GMS 11711, 11645, DFP 51) are: wing, 122, 126, 124; tail, 61, 61, 60; exposed culmen, 21.5, 23.0, 22; tarsus, 20.5, 21.0, 21.5; of the female (GMS 11712): wing, 126; tail, 62; exposed culmen, 21.5; tarsus, 21.0.

Lobipes lobatus. Red-necked Phalarope.—This species we found only on Davidson Point, just west of the Base; on July 1 we flushed a single individual from the grassy edge of a pond near the dump. It fluttered up, hesitated as if about to return to the water, then shot off erratically, calling *pit! pit!*

The following day we failed to find the bird at this pond, but took the general direction it had taken, and presently flushed a Red-necked Phalarope. We followed it, ascertaining that it was a male. While we were stalking it, a female appeared and the male fluttered its wings without leaving the water. The female flew off and we did not see her again. We collected the male, finding large brood-patches among the belly plumage. We searched a long time for a nest, but in vain.

These birds were in the marshiest, grassiest part of Davidson Point. In the middle of the pond from which we first flushed the male on July 2, the water was about a foot deep and the bottom muddy. There was no comparably marshy area anywhere just north of the Base or near the mouth of the Jordan River, but marshes near Cape Dorchester and at Lake Amadjuak were of similar character.

Wynne-Edwards (1952:370) reports "unidentified phalaropes" from several localities, including Frobisher Bay (September 13, 1950). Despite Kumlien's considerable discussion (1879:84) of the nesting of this species in Cumberland Sound, Taverner (1934: 526) says that it is known to breed "northward only to Southampton Island, northern Labrador, and the northwestern mainland." Soper (1946:232) mentions a male bird seen in the Bowman Bay area June 26–27, 1929. Bray and Manning (1943:526) collected a male and two females in the Taverner Bay area in 1939 and 1940. Shortt and Peters (1942:344) believed that six phalaropes which they saw at sea near Lake Harbour on August 14, 1939 were of this species.

Stercorarius pomarinus. Pomarine Jaeger.—We saw the Pomarine Jaeger only at Lake Amadjuak. At least two pairs bred near the southeast shore. Long-tailed Jaegers inhabited the same general area in August and we believe the two species had nested not far apart.

We first saw the Pomarine on August 8. That day a pair were flying about near our aircraft's anchorage. We soon discovered that the birds' activities centered about an arm of water in which a young bird, good-sized but apparently unable to fly, was swimming deep with head low. The old birds circled us, sometimes flying close, but they were not at all aggressive (see Pitelka, *et al.*, 1955:6). They tried no distraction behavior. Arctic Terns dived at them occasionally. The jaegers' callnote was a rough *heck* or *keck*. We collected them easily, finding the male (GMS 11821) to be immaculate on the chin, throat, breast and belly, except for a faint dusky band across the chest, while the female (GMS 11822) had a broad dark chest-band and much dusky flecking in the middle of the throat and throughout the whole belly. The female was the larger, but not conspicuously so. Her long middle rectrices, unlike those of the male, were almost perfectly flat. They protruded beyond the rest of the tail 71 mm., while those of the male protruded 75 mm. In both specimens the tarsi and toes (including the webs) were dull black, the bill brownish olive as far forward as the anterior edge of the nostrils, dusky on the tip. The testes measured about 6×4 mm. On the belly of the female, *but not of the male*, were two large brood-patches. Pitelka, *et al.* (1955:5) report brood-patches in specimens of both sexes.

The young bird (male, GMS 11823) was shaggy with brownish gray down, especially on the head and under parts. The tarsi and proximal parts of the toes (and their webs) were pale blue, with faint green tinge, the distal parts of the toes (and webs) dusky. The bill was dull bluish gray, the eyes dark brown.

On August 15, not far from the area in which we had collected the three above-discussed specimens, we saw at least three adult Pomarine Jaegers (one white below; one dark below; one white below except for a dark chest-band) and a young bird. We did not see two adults together, and when, apparently by sheer chance, we came upon the young bird, no parent bird attacked us. The chick was nowhere near a lake or marsh. It could fly a very little, but we had no trouble catching it. Though downy all over the head and under parts, it was perceptibly more mature than the chick collected August 8. Its tarsi were pale blue, fading gradually to pinkish flesh-color on the proximal third of the toes and their webs, then changing abruptly to dusky. It was very restless. We wanted to photograph it but it would not keep still. While we were handling it a parent bird called in the distance and it gave a weak-voiced reply.

The above-discussed breeding records may well be the first for Baffin Island. Kumlien (1879:94) reported the species' nesting along the west side of Davis Strait, but, as Salomonsen (1950:261) points out, the Pomarine Jaeger "certainly does not nest on high cliffs," and Kumlien's statements seem to us to describe jaegers at the nesting-cliffs of other seabirds upon which they possibly were preying. Soper, in his earlier report (1928:80), mentioned no breeding records aside from those of Kumlien; more recently (1946:232–3) he has called the Pomarine Jaeger "a comparatively rare bird" in the Bowman Bay area, and has stated that in southeastern Baffin Island its breeding is "uncertain."

We did not record the species anywhere about Frobisher Bay, in the Wordie Bay district, or in the vicinity of Cape Dorchester. Wynne-Edwards (1952:370) tells us that Anderson recorded it in Frobisher Bay September 15–16, 1950.

Stercorarius parasiticus. Parasitic Jaeger.—This species we saw only near Cape Dorchester, where we collected an adult male (GMS 11830) August 11. It was one of a pair to which we were attracted by hearing the loud *error, error* callnotes in the far distance. The specimen is creamy white on the chin, upper throat, breast and belly, but light brownish gray across the lower throat. The bill was black at the tip, olive throughout the dertrum, and purplish flesh-color on the basal half of the lower mandible. The tarsi and toes were blackish gray. In the stomach were Lapland Longspur feathers.

Stercorarius longicaudus. Long-tailed Jaeger.—This jaeger we did not record in the Wordie Bay district or in Frobisher Bay. We first saw it on August 8, at Lake Amadjuak, a single bird flying in the distance. On August 11 we found a family near Cape Dorchester. The two young, which were very dark and almost completely free of down, flew well. They amazed us by coming straight for us, diving at us in the manner of adults defending a nest. Their cry was a shrill *kree-a*, sometimes repeated rapidly. They were much bolder than their parents. They chased each other playfully, calling noisily, never getting very far apart, and alighting within a few inches of each other. We collected all four birds (GMS 11831, –2, –3, –4). One chick was a male, the other a female. The tarsi of the young were bluish gray, the toes (with webs) dusky. In the stomachs of the adults and of one of the chicks were lemming remains. In the stomach of the other chick was the humerus of a small passerine bird. Both chicks were very fat. The wing-spread of the young male was 31 inches.

At Lake Amadjuak, on August 15, we saw several Long-tailed Jaegers near marshy ponds about two miles from the comparatively dry upland in which we found the young

Pomarine Jaeger that same day. On a ridge between ponds we saw two parent Long-tailed Jaegers and their single progeny, a dark bird which flew well but giddily. The parent birds had a way of swinging upward into the wind and hanging in one spot with wings beating. The callnote of these three birds was a ringing *kree-kree* or *kree-pee*. The ridge was alive with Rock Ptarmigan (*Lagopus mutus*) to which the jaegers paid no attention so far as we could see.

Larus hyperboreus. Glaucous Gull.—This species we saw almost daily, usually near salt water, but occasionally well inland along a stream. We often saw it along the Sylvia Grinnell, invariably flying above water. Two birds which scolded us loudly three miles upriver from the mouth on June 19, probably had a nest on a low cliff there. On June 24, at a Snowy Owl nest near a small river east of the Base, a Glaucous Gull joined the owls in scolding and swooping at us. On this occasion the gull left the river entirely.

On rocky islands off the mouth of the Jordan River several pairs of Glaucous Gulls nested. We saw about 70 individuals (all adult) on our first visit to this area, July 13, but many apparently without nests or young. Above an island on which Common Eiders (*Somateria mollissima*) were nesting a pair of scolding gulls circled. We found a new-looking nest of this gull and part of a gull's egg, but no chicks. Near another island we collected an adult male Glaucous Gull (GMS 11755). It had three well-defined brood-patches into which new feathers were growing. The beak was yellow with a subterminal spot of orange on the mandible, the eyelids deep yellow, the irides light yellow, the tarsi and toes (including webs) pinkish flesh-color. In each wing five outer primaries were unmolted.

On July 17 we found three pairs of Glaucous Gulls nesting along the gorgelike channel between Hill and Bishop Islands. Their scolding note was a deep *ka, ka, ka*. Occasionally they squealed or yelped. They dived at us cautiously, never coming very close. That all were molting was evident from a notch in the following edge of each wing. Herring Gulls were nesting about lakes in the interior of Hill Island. Between the clifflike outer shore and these lakes we were scolded by both Glaucous Gulls and Herring Gulls and dived at fiercely by the latter. The same sort of overlap existed just west of the Jordan River mouth, July 18–19. In these zones of overlap a Herring Gull often gave chase to, or dived at, a Glaucous Gull, but not *vice versa*.

On July 27 we examined two well-grown young Glaucous Gulls which Eskimos had caught a week or so earlier. This taking of good-sized chicks, late in the season, may explain the non-breeding status of many of the adult gulls we saw near the mouth of the Jordan River.

On July 29, on a high rocky island across the bay from the Base, we found several Glaucous Gulls nesting. In an adult female specimen (GMS 11796) collected that day four outer primaries in each wing were unmolted.

We did not see the Glaucous Gull at Lat. 68°31′ N., Long. 71°22′ W., at a large lake 50 miles east-northeast of Wordie Bay, August 8, or along the southeast shore of Lake Amadjuak, August 8 and 15. We saw a single Glaucous Gull near Cape Dorchester, August 11.

The male and female specimens mentioned above (GMS 11755 and 11796) measure: wing, 465, 434; tail, 196, 186; exposed culmen, 61, 59; tarsus, 67, 68. The bill of the male, though only slightly longer than that of the female, is noticeably heavier.

Larus kumlieni. Kumlien's Gull.—This species we did not identify with certainty. A gull with pure white tail and with what appeared to be gray rather than black

wingtips circled over us while we were on the tidal flats near the Base, June 16. A loose flock of 17 gulls, feeding on the Tarr Inlet tidal flats, June 25, seemed to be small for Glaucous Gulls, but no bird among them could we identify positively, so we could not be sure how large they were. Their wingtips were not conspicuously black. A compact flock of about 100 gulls at rest along the edge of Tarr Inlet at low tide on July 7 also appeared to be smaller than Glaucous Gulls. Many of these must have been subadult. Flying birds which appeared to have perfectly white tails did not have clearly black wingtips. Some of the youngest-looking birds were quite dark all over and cold gray, rather than brownish gray or buffy, in tone. None of these seemed to be conspicuously dark above and white below, like the young gulls seen by A. Anderson in Frobisher Bay, September 13 to 15, 1950 (Wynne-Edwards, 1952:371).

An immature gull with slight limp, feeding at low tide among seaweed near Davidson Point, June 30, had very dark remiges. The contrast between the "blackness" of these feathers and the lightness of the wing coverts was noticeable when the wings were spread. Note, in this connection, that Kumlien (1879:99) described the "primaries and tail" of full-grown young *Larus glaucescens* (=*Larus kumlieni*) taken in Cumberland Sound in early September as "*very nearly black*."

Larus argentatus. Herring Gull.—This gull we saw repeatedly, usually inland rather than along the coast. It nested in scattered pairs or small groups on islands in large lakes.

The non-breeding gulls which we saw from time to time (July 7–22) in Tarr Inlet we have already discussed. Where these birds went at high tide we did not learn. We could not get near them, and we had difficulty seeing them clearly even with binoculars. They kept together, feeding near the tidal streams or resting in a compact group. On July 7, there was a marked difference between their wariness and the boldness of a single Herring Gull which circled us, scolding, and finally began diving at us. We collected this bird (GMS 11744), finding it to be a male with three well defined brood-patches, molting primaries, and small testes.

On July 17, near deep-looking lakes in the interior of Hill Island and about 300 feet above sea-level, we came upon three pairs of Herring Gulls, all of which dived at us. On scanning the largest lake with our binoculars, we descried five young gulls, two on an island and three in the water just beyond. These chicks, though good-sized, were still somewhat downy.

Between the mouth of the Jordan and the high country a mile or so to the west, were rough, lake-dotted hills. Here several Herring Gulls nested. So long as we stayed along the river the only gulls which scolded us were Glaucous Gulls; but if we moved westward into the tundra the Herring Gulls came to meet us. Dividing their attention between us and the Glaucous Gulls, they scolded loudly and dived with vigor.

On August 3, we saw four pairs of Herring Gulls flying about over lowland meadows just east of Tarr Inlet. In each of two lakes was an islet on which there was a gull nest. Not far from one of the nests was an apparently full-winged young bird, swimming high in the water. It was of a light buffy color, in this respect being quite different from "average" young *argentatus* Sutton had seen on the Labrador and on Southampton Island.

On August 11, we saw several adult Herring Gulls near Cape Dorchester. They dived at us repeatedly, so probably had young in the lakes. On August 15, we collected an adult female Herring Gull (GMS 11846) along the southeast shore of Lake Amadjuak. It was one of the four adult Herring Gulls we saw there that day.

Our male and female specimens (GMS 11744 and 11846) measure: wing, 420, 407;

FIG. 2. Wing-tips of breeding adult *Larus argentatus smithsonianus* from southern Baffin Island. *Left:* male, GMS 11754, Tarr Inlet, near head of Frobisher Bay, July 7, 1953. *Right:* female, GMS 11846, Lake Amadjuak, August 15, 1953.

tail, 178, 169; exposed culmen, 55, 51; tarsus, 60, 61. These represent the race *smithsonianus*, apparently. Whether *L. a. thayeri* is actually "a little smaller" than *smithsonianus* (see Dwight, 1917:414) or not, the wing-tip pattern of *thayeri* is distinctive. A comparison of Figure 2 with the wing-tip patterns of *smithsonianus* and *thayeri* as illustrated by Dwight (1917:413; 1925:353, Fig. 101, and 354, Fig. 103) reveals that, at least as regards this character, our birds are not even close to *thayeri*. Wynne-Edwards (1952:371) has reported *smithsonianus* from Frobisher Bay, but from the wording of his statement we are not sure that this subspecific determination was based on specimens collected or examined by him. Soper (1946:236) makes this statement: "All birds examined from southern Baffin Island are unmistakable *smithsonianus*."

Xema sabinei. Sabine's Gull.—Taverner (1934:125) calls "southwestern Baffin Island" the eastern limit of this species' breeding in the Arctic Archipelago. Soper (1946:237) says that the bird "breeds abundantly" about Bowman Bay, but that it is rare and irregular in eastern Baffin Island. Shortt and Peters (1942:345) report a September sight record for Clyde Inlet and a July specimen taken on Big Island (not far from Lake Harbour). We recorded it only once: seven adults in breeding feather on the tidal flats near the Base, June 16. After flying over the open water between the shore and the bay-ice and feeding about the numerous tidal pools, they settled on a mud bar. We collected three males and a female, all very fat, and all somewhat rosy on the breast and belly. They had dark brown eyes and vermilion eyelids and mouth-lining. The bill was black throughout the basal two-thirds, dull yellow at the tip. The legs

and feet were grayish black except for the slightly paler distal third of the front of the tarsus. The gonads were considerably enlarged. The stomachs were well filled with small crustaceans, hundreds of which we had seen alive on the flats. These "shrimps" were somewhat curled up when dead; when straightened out and swimming they looked like tiny minnows.

Sterna paradisaea. Arctic Tern.—If this species breeds at all in southeastern Baffin Island it must do so irregularly. Taverner (1934:126) says that records "along the west shores of Davis Strait and Baffin Bay are few." Kumlien (1879:101) saw "thousands" on June 19 and 20 in Cumberland Sound, but this was his only record for that area. Dalgety (1936:587) found terns "fairly numerous on the rivers and lakes" about Eglinton Fjord August 14–29, 1934, but Wynne-Edwards (1952:372) did not even see the bird in that district August 20–27, 1950. Soper (1946:238) says that the Eskimos at Lake Harbour are familiar with the bird, that they observe it "sometimes commonly," especially in autumn, but that they "appear to know of no nesting places."

We did not see the species anywhere about Frobisher Bay in 1953. We did find it, however, at Lake Amadjuak and near Cape Dorchester. At Lake Amadjuak we saw at least seven adults on August 8. They flew up rapidly while we were trying to capture a young Pomarine Jaeger. They dived at us a few times but soon gave their undivided attention to the parent jaegers, which did not return the attack. On August 15 we saw five adult terns at Lake Amadjuak. One of these, a male (GMS 11847), we collected. It was not molting.

Near Cape Dorchester, on August 11, we saw several small parties of adult terns, but found no well-defined colony. As we were walking along the shore of a large lake, four scolding terns flew toward us, high in air. A Herring Gull also flew up, and the terns attacked it fiercely, pecking so hard that it made off squawking. Near a low island, well out from shore, we finally descried two tern chicks, fairly well grown but still downy. At lakes near by we collected two adult male terns (GMS 11835, –6). They were in full breeding plumage, i.e., not molting. The testes each measured about 7×5 mm. The stomach of one bird held a mass of partly digested small fish.

Uria lomvia. Brünnich's Murre.—Wynne-Edwards (1952:372) saw many Brünnich's Murres along the north side of Frobisher Bay, "especially . . . off the southeast coast of Lok's Land," on August 8, 1937. Soper (1946:238) mentions Eskimo reports of colonies "on the cliffs of Resolution Island and . . . the sheer rocky promontories of the opposite coast along Gabriel Strait." We recorded the species only once: a solitary adult male (GMS 11795) collected July 29 in the middle of the bay several miles south of the Base. It was in breeding plumage, not molting, and fat, but not excessively so. There was no brood-patch. The right testis measured about 4×25 mm., the left, 4×17. The mouth-lining was yellow. The feet were grayish black except for the dull brownish yellow of the front and sides of the tarsi and tops of the toes. The specimen represents the nominate race, the wing measuring 201 mm. (primaries pressed flat), the culmen, 33.

Cepphus grylle. Black Guillemot.—This species breeds in Frobisher Bay, but we found neither nests nor young. On June 24, an Eskimo reported seeing an adult at high tide between the bay-ice and the shore. On June 27, we saw about 20 near a mass of broken-up ice off the mouth of the Sylvia Grinnell River. On July 13, on our 35-mile boat trip to the Jordan River and back, we saw only two birds. They were flying along the edge of a mass of ice well out in the bay.

On July 17, we saw two guillemots along the outer shore of Hill Island and two

more in the channel between Hill and Bishop Islands. The birds may well have been nesting in the rubble at the foot of the shoreline cliffs. On July 20, between the Base and the mouth of the Jordan, and late at night, two guillemots flew round our boat and alighted. We shot one (GMS 11776). An hour later, near Davidson Point, two more flew up, circled, and alighted, and again we shot one (GMS 11777). Both of these proved to be fat males with small testes. Neither had a brood-patch and neither had anything in its stomach.

On August 6 we saw several adults among islands about five miles southeast of Tarr Inlet. The only specimen collected, a male (GMS 11818), was not fat. A well-defined brood-patch, without any sign of median feather partition, extended across the belly. The stomach was empty.

Measurements of the three above-mentioned males (GMS nos. 11776, 11777, 11818) are as follows: wing (primaries pressed flat), 156, 155, 165; culmen, 31.5, 30, 31.

Whether these three birds were actually breeding is a question. The last was obviously the only full adult of the three. It was the only one having a brood-patch and the only one in which the flight feathers (both wings and tail) showed neither fading nor wear at the tips. Its black plumage throughout is exceedingly rich, glossy, and fresh looking. The white feathers of the wing-patch are without dark tipping of any sort, though the distal greater secondary coverts are dark basally along the shaft proper. The basal white area of the outer primary's inner web extends to within 49 mm. of the tip.

In no. 11776, virtually every feather of the white wing-patch is tipped with brown, most of the secondaries have a small white spot at the tip, and the basal white of the outer primary's inner web extends to within 35 mm. of the tip. In no. 11777, the secondaries and greater and middle primary coverts are boldly tipped with white, a very few feathers of the white wing-patch are tipped with brown, and the white of the outer primary's inner web extends to within 24 mm. of the tip. The wing is much like that of the "extreme" *mandti* figured by Wynne-Edwards (1952:373), though we find no statement as to the amount of white on the inner web of that bird's outer primary.

We wonder if birds in this plumage actually breed. We wonder, too, what advantage there is in recognizing this "hybrid swarm" (Wynne-Edwards, *loc. cit.*) or "heterozygotous assemblage" (Salomonsen, 1944:91) as a geographical race. Two of the specimens discussed above must be very close indeed to true *mandti*, for they have little or no black at the base of the greater secondary coverts, yet the three specimens vary greatly as regards the amount of white on the inner web of the outer primary. Gross (1937:37) reports both *mandti* and "*arcticus*" in certain Button Islands breeding populations.

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